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भाग 13 ठोस अवस्था भौतिकी

(पहला पुनरीक्षण)

Indian Standard

QUANTITIES AND UNITS

PART 13 SOLID STATE PHYSICS

(First Revision)

ICS 01.060; 07.030

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

March 1997 **Price Group 8**

NATIONAL FOREWORD

This Indian Standard (First Revision) which is identical with ISO 31-13 : 1992 'Quantities and units — Part 13 : Solid state physics' issued by the International Organization for Standardization (ISO), was adopted by the Bureau of Indian Standards on the recommendation of the Basic Standards Sectional Committee and approval of the Management and Systems Division Council.

The text of the ISO Standard has been approved as suitable for publication as Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

> Comma (,) has been used as a decimal marker while in Indian Standards the current practice is to use a point (.) as the decimal marker.
>
> Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

In this revised version the following are the major technical changes:

- the decision by the International Committee for Weights and Measures (Comité International des Poids et Mesures, CIPM) in 1980 concerning the status of supplementary units has been incorporated;
- the quantity affinity has been included in the list of quantities; and
- the unit ångström, Å, in use temporarily, has been transferred to the "Conversion factors and remarks" column.

In the adopted standard normative references appear to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the additions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 31-5 : 1992	IS 1890 (Part 5) : 1995 Quantities and units: Part 5 Electricity and magnetism (*first revision*)	Identical
ISO 31-8 : 1992	IS 1890 (Part 8) : 1995 Quantities and units: Part 8 Physical chemistry and molecular physics (*first revision*)	Identical
ISO 31-10 : 1992	IS 1890 (Part 10) : 1995 Quantities and units: Part 10 Nuclear reactions and ionizing radiations (*first revision*)	Identical

ADDITIONAL INFORMATION

The other parts of IS 1890/ISO 31, under the general title 'Quantities and units' are:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 31-0 : 1992	IS 1890 (Part 0) : 1995 Quantities and units: Part 0 General principles (*first revision*)	Identical
ISO 31-1 : 1992	IS 1890 (Part 1) : 1995 Quantities and units: Part 1 Space and time (*third revision*)	Identical
ISO 31-2 : 1992	IS 1890 (Part 2) : 1995 Quantities and units: Part 2 Periodic and related phenomena (*second revision*)	Identical

(*Continued on third cover page*)

Indian Standard
QUANTITIES AND UNITS
PART 13 SOLID STATE PHYSICS
(First Revision)

1 Scope

This part of ISO 31 gives names and symbols for quantities and units of solid state physics. Where appropriate, conversion factors are also given.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 31. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 31 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 31-5:1992, *Quantities and units — Part 5: Electricity and magnetism.*

ISO 31-8:1992, *Quantities and units — Part 8: Physical chemistry and molecular physics.*

ISO 31-10:1992, *Quantities and units — Part 10: Nuclear reactions and ionizing radiations.*

3 Names and symbols

The names and symbols for quantities and units of solid state physics are given on the following pages.

SOLID STATE PHYSICS Quantities

Item No.	Quantity	Symbol	Definition	Remarks
13-1.1	lattice vector	$\boldsymbol{R}$, $\boldsymbol{R}_0$, $\boldsymbol{T}$	Translation vector which maps the crystal lattice on itself	
13-1.2	fundamental lattice vector	$\boldsymbol{a}_1$, $\boldsymbol{a}_2$, $\boldsymbol{a}_3$ $\boldsymbol{a}$, $\boldsymbol{b}$, $\boldsymbol{c}$	Fundamental translation vectors for the crystal lattice	$\boldsymbol{R} = n_1\boldsymbol{a}_1 + n_2\boldsymbol{a}_2 + n_3\boldsymbol{a}_3$ where n_1, n_2 and n_3 are integers.
13-2.1	angular reciprocal lattice vector	$\boldsymbol{G}$	Vector whose scalar products with all fundamental lattice vectors are integral multiples of 2π	In crystallography, however, the quantity $\boldsymbol{G}/(2\pi)$ is commonly used.
13-2.2	fundamental reciprocal lattice vectors	$\boldsymbol{b}_1$, $\boldsymbol{b}_2$, $\boldsymbol{b}_3$ $\boldsymbol{a}^*$, $\boldsymbol{b}^*$, $\boldsymbol{c}^*$	The fundamental translation vectors for the reciprocal lattice	$\boldsymbol{a}_i \cdot \boldsymbol{b}_k = 2\pi\delta_{ik}$ In crystallography, however, the quantities $\boldsymbol{b}_k/(2\pi)$ are also often used.
13-3	lattice plane spacing	d	Distance between successive lattice planes	
13-4	Bragg angle	ϑ	$2d \sin \vartheta = n\lambda$ where λ is the wavelength of the radiation in question and n is an integer	
13-5	order of reflexion	n		
13-6.1	short-range order parameter	σ	Fraction of nearest-neighbour atom pairs in an Ising ferromagnet having parallel magnetic moments, minus the fraction having antiparallel magnetic moments	Similar definitions apply to other order-disorder phenomena.
13-6.2	long-range order parameter	s	Fraction of atoms in an Ising ferromagnet having their magnetic moments directed in one direction, minus the fraction with magnetic moments in the opposition direction	
13-7	Burgers vector	$\boldsymbol{b}$	Vector characterizing a dislocation, i.e. the closing vector in a Burgers circuit encircling a dislocation line	

Units				SOLID STATE PHYSICS
Item No.	**Name of unit**	**International symbol for unit**	**Definition**	**Conversion factors and remarks**
13-1.a	metre	m		ångström (Å), 1 Å = 10^{-10} m
13-2.a	reciprocal metre, metre to the power minus one	m^{-1}		
13-3.a	metre	m		ångström (Å), 1 Å = 10^{-10} m
13-4.a	radian	rad		
13-4.b	degree	°		1° = (π/180) rad = 0,017 453 29 rad
13-5.a	one	1		See the introduction, subclause 0.3.2.
13-6.a	one	1		See the introduction, subclause 0.3.2.
13-7.a	metre	m		ångström (Å), 1 Å = 10^{-10} m

SOLID STATE PHYSICS (*continued*) Quantities

Item No.	Quantity	Symbol	Definition	Remarks
13-8.1	particle position vector	$\boldsymbol{r}$, $\boldsymbol{R}$		To distinguish between electron position vectors and ion or atom position vectors, lower case and capital letters are used, respectively.
13-8.2	equilibrium position vector of ion or atom	$\boldsymbol{R}_0$		
13-8.3	displacement vector of ion or atom	$\boldsymbol{u}$	$\boldsymbol{u} = \boldsymbol{R} - \boldsymbol{R}_0$	
13-9	Debye-Waller factor	D	Factor by which the intensity of a diffraction line is reduced because of lattice vibrations	D is sometimes expressed as $\exp(-2W)$; in Mössbauer spectroscopy it is also called the f-factor and denoted by f.
13-10.1	angular repetency, angular wavenumber	k, q	$k = 2\pi/\lambda$ where λ is the wavelength	The corresponding vector quantity $\boldsymbol{k}$ or $\boldsymbol{q}$ is called the propagation vector. When a distinction is needed between k and the symbol for the Boltzmann constant, k_B can be used for the latter. When a distinction is needed between k and q, q should be used for phonons and magnons, and k for particles like electrons and neutrons.
13-10.2	Fermi angular repetency, Fermi angular wavenumber	k_F	Angular repetency of electrons in states on the Fermi sphere	
13-10.3	Debye angular repetency, Debye angular wavenumber	q_D	Cut-off angular repetency in the Debye model of the vibrational spectrum of a solid	The method of cut-off shall be specified.
13-11	Debye angular frequency	ω_D	Cut-off angular frequency in the Debye model of the vibrational spectrum of a solid	The method of cut-off shall be specified.

Units				SOLID STATE PHYSICS (*continued*)
Item No.	**Name of unit**	**International symbol for unit**	**Definition**	**Conversion factors and remarks**
13-8.a	metre	m		
13-9.a	one	1		See the introduction, subclause 0.3.2.
13-10.a	radian per metre	rad/m		
13-10.b	reciprocal metre, metre to the power minus one	m^{-1}		
13-11.a	radian per second	rad/s		
13-11.b	reciprocal second, second to the power minus one	s^{-1}		

SOLID STATE PHYSICS (*continued*) Quantities

Item No.	Quantity	Symbol	Definition	Remarks
13-12	Debye temperature	Θ_D	$k\Theta_D = \hbar\omega_D$ where k is the Boltzmann constant and $\hbar$ is the Planck constant divided by 2π.	$k = (1{,}380\ 658 \pm 0{,}000\ 012) \times 10^{-23}$ J/K [1] $\hbar = (1{,}054\ 572\ 66 \pm 0{,}000\ 000\ 63) \times 10^{-34}$ J · s [1]
13-13	spectral concentration of vibrational modes (in terms of angular frequency)	g, N_ω	Number of vibrational modes in an infinitesimal interval of angular frequency, divided by the size of that interval and by volume	$g(\omega) = N_\omega(\omega) = \frac{dN(\omega)}{d\omega}$ where $N(\omega)$ is the total number of vibrational modes with angular frequency less than ω, divided by volume.
13-14	Grüneisen parameter	γ, Γ	$\gamma = \alpha_V/(\varkappa_T c_V \varrho)$ where α_V is the cubic expansion coefficient, $\varkappa_T$ is the isothermal compressibility, c_V is the massic heat capacity at constant volume and ϱ is the volumic mass	
13-15	Madelung constant	α	For a uni-univalent ionic crystal of specified structure, the electrostatic energy per pair of ions is $E = \alpha \cdot \frac{e^2}{4\pi\varepsilon_0 a}$ where e is the elementary charge, ε_0 is the permittivity of vacuum and a is a lattice constant which should be specified	
13-16.1	mean free path of phonons	l_{ph}, Λ		
13-16.2	mean free path of electrons	l, l_e		

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1) CODATA Bulletin 63 (1986).

Units SOLID STATE PHYSICS (*continued*)

Item No.	**Name of unit**	**International symbol for unit**	**Definition**	**Conversion factors and remarks**
13-12.a	kelvin	K		
13-13.a	second per radian cubic metre	$s/(rad \cdot m^3)$		
13-13.b	second per cubic metre	s/m^3		
13-14.a	one	1		See the introduction, subclause 0.3.2.
13-15.a	one	1		See the introduction, subclause 0.3.2.
13-16.a	metre	m		

SOLID STATE PHYSICS (*continued*) Quantities

Item No.	Quantity	Symbol	Definition	Remarks
13-17	density of states	N_E, ϱ	$\varrho(E) = N_E(E) = \frac{\mathrm{d}N(E)}{\mathrm{d}E}$ where $N(E)$ is the total number of one-electron states with energy less than E, divided by volume	
13-18	residual resistivity	ϱ_R	For metals, the resistivity extrapolated to zero thermodynamic temperature	
13-19	Lorenz coefficient	L	$L = \lambda/\sigma T$ where λ is the thermal conductivity, σ is the electrical conductivity and T is the thermodynamic temperature	
13-20	Hall coefficient	A_H, R_H	In an isotropic conductor, the relation between electric field strength $\boldsymbol{E}$ and current density $\boldsymbol{J}$ is $\boldsymbol{E} = \varrho\boldsymbol{J} + R_H(\boldsymbol{B} \times \boldsymbol{J})$ where ϱ is the resistivity and $\boldsymbol{B}$ is the magnetic flux density	
13-21	thermoelectromotive force between substances a and b	E_{ab}		The positive direction for E_{ab} is from substance a to substance b at the cold junction.
13-22	Seebeck coefficient for substances a and b	S_{ab}, ε_{ab}	$S_{ab} = \frac{\mathrm{d}E_{ab}}{\mathrm{d}T}$ where T is the temperature of the hot junction	$S_{ab} = S_a - S_b$ where S_a is the Seeback coefficient of substance a.
13-23	Peltier coefficient for substances a and b	Π_{ab}	Peltier heat power developed at a junction, divided by the electric current flowing from substance a to substance b	$\Pi_{ab} = \Pi_a - \Pi_b$ where Π_a is the Peltier coefficient of substance a.

Units SOLID STATE PHYSICS (*continued*)

Item No.	Name of unit	International symbol for unit	Definition	Conversion factors and remarks
13-17.a	reciprocal joule per cubic metre, joule to the power minus one per cubic metre	J^{-1}/m^3		
13-17.b	reciprocal electronvolt per cubic metre, electronvolt to the power minus one per cubic metre	eV^{-1}/m^3		1 $eV^{-1}/m^3 = (6{,}241\ 506\ 4 \pm 0{,}000\ 001\ 9) \times 10^{18}\ J^{-1}/m^3$ 1)
13-18.a	ohm metre	$\Omega \cdot m$		
13-19.a	volt squared per kelvin squared	V^2/K^2		
13-20.a	cubic metre per coulomb	m^3/C		
13-21.a	volt	V		
13-22.a	volt per kelvin	V/K		
13-23.a	volt	V		

1) CODATA Bulletin 63 (1986).

SOLID STATE PHYSICS (*continued*) Quantities

Item No.	Quantity	Symbol	Definition	Remarks
13-24	Thomson coefficient	μ, τ	Thomson heat power developed divided by the electric current and temperature difference	μ is positive if heat is developed when the temperature decreases in the direction of the electric current.
13-25	work function	Φ	Energy difference between an electron at rest at infinity and an electron at the Fermi level in the interior of a substance	The contact potential difference between substances a and b is given by $V_a - V_b = (\Phi_b - \Phi_a)/e$ where e is the elementary charge.
13-26 (—)	electron affinity	χ	Energy difference between an electron at rest at infinity and an electron at the lowest level of the conduction band in an insulator or semiconductor	
13-27 (*13-26*)	Richardson constant	A	The thermionic emission current density J for a metal is $J = AT^2 \exp(-\Phi/kT)$ where T is the thermodynamic temperature, k is the Boltzmann constant and Φ is the work function	
13-28.1 (*13-27.1*)	Fermi energy	E_F, ε_F	In a metal, the highest energy of occupied states at zero thermodynamic temperature	At $T = 0$, E_F is equal to the chemical potential per electron.
13-28.2 (*13-27.2*)	gap energy	E_g	Difference in energy between lowest level of conduction band and highest level of valence band	
13-28.3 (*13-27.3*)	donor ionization energy	E_d		
13-28.4 (*13-27.4*)	acceptor ionization energy	E_a		

Units SOLID STATE PHYSICS (*continued*)

Item No.	**Name of unit**	**International symbol for unit**	**Definition**	**Conversion factors and remarks**
13-24.a	volt per kelvin	V/K		
13-25.a	joule	J		
13-25.b	electronvolt	eV		1 eV = (1,602 177 33 ± 0,000 000 49) × 10^{-19} J [1]

[1] CODATA Bulletin 63 (1986).

Item No.	**Name of unit**	**International symbol for unit**	**Definition**	**Conversion factors and remarks**
13-26.a	joule	J		
13-26.b	electronvolt	eV		1 eV = (1,602 177 33 ± 0,000 000 49) × 10^{-19} J [1]

[1] CODATA Bulletin 63 (1986).

Item No.	**Name of unit**	**International symbol for unit**	**Definition**	**Conversion factors and remarks**
13-27.a	ampere per square metre kelvin squared	$A/(m^2 \cdot K^2)$		
13-28.a	joule	J		
13-28.b	electronvolt	eV		1 eV = (1,602 177 33 ± 0,000 000 49) × 10^{-19} J [1]

[1] CODATA Bulletin 63 (1986).

SOLID STATE PHYSICS (*continued*) Quantities

Item No.	Quantity	Symbol	Definition	Remarks
13-29 (*13-28*)	Fermi temperature	T_F	$T_F = E_F/k$ where k is the Boltzmann constant	
13-30.1 (*13-29.1*)	electron number density, volumic electron number	n	Number density of electrons in conduction band	Subscripts n and p or − and + are often used to denote electrons and holes, respectively. n_n and n_p are also used for electron number densities, and p_n and p_p for hole number densities, in the n-type and p-type regions, respectively, of a p-n junction.
13-30.2 (*13-29.2*)	hole number density, volumic hole number	p	Number density of holes in valence band	
13-30.3 (*13-29.3*)	intrinsic number density, volumic intrinsic number	n_i	$np = n_i^2$	
13-30.4 (*13-29.4*)	donor number density, volumic donor number	n_d, N_d	Number density of donor levels	
13-30.5 (*13-29.5*)	acceptor number density, volumic acceptor number	n_a, N_a	Number density of acceptor levels	
13-31 (*13-30*)	effective mass	m^*		In semiconductors, m_n^* is used for electrons, and m_p^* for holes.
13-32 (*13-31*)	mobility ratio	b	$b = \mu_n/\mu_p$ where μ_n and μ_p are the mobilities of electrons and holes, respectively	For mobility, see ISO 31-10:1992, item No. 10-26.
13-33.1 (*13-32.1*)	relaxation time	τ	Time constant for exponential decay towards equilibrium	For electrons in metals, $\tau = l/v_F$ where l is the mean free path and v_F is the speed of electrons on the Fermi sphere.
13-33.2 (*13-32.2*)	carrier life time	τ, τ_n, τ_p	Time constant for recombination or trapping of minority charge carriers in semiconduc tors	See remark on 13-30.

Units SOLID STATE PHYSICS (*continued*)

Item No.	Name of unit	International symbol for unit	Definition	Conversion factors and remarks
13-29.a	kelvin	K		
13-30.a	reciprocal cubic metre, metre to the power minus three	m^{-3}		
13-31.a	kilogram	kg		
13-32.a	one	1		See the introduction, subclause 0.3.2.
13-33.a	second	s		

SOLID STATE PHYSICS (*continued*) Quantities

Item No.	Quantity	Symbol	Definition	Remarks
13-34 (*13-33*)	diffusion length	L, L_n, L_p	$L = \sqrt{D\tau}$ where D is the diffusion coefficient and τ is the life time	See remark on 13-30. For D, see ISO 31-8:1992, item No. 8-39.
13-35 (*13-34*)	exchange integral	J	Interaction energy arising from electron exchange	
13-36.1 (*13-35.1*)	Curie temperature	T_C	Critical temperature of a ferro- or ferrimagnet	T_{cr} is used for critical temperature in general.
13-36.2 (*13-35.2*)	Néel temperature	T_N	Critical temperature of an antiferromagnet	
13-36.3 (*13-35.3*)	superconductor transition temperature	T_c	Critical temperature of a superconductor	
13-37.1 (—)	thermodynamic critical magnetic flux density	B_c	$G_n - G_s = \frac{1}{2} \frac{B_c^2 \cdot V}{\mu_0}$ where G_n and G_s are the Gibbs free energies at zero magnetic flux density in a normal conductor and superconductor, respectively, μ_0 is the permeability of vacuum and V is the volume	In type I superconductors, B_c is the critical magnetic flux density for disappearance of superconductivity. The symbol B_{c3} is used for the critical magnetic flux density for disappearance of surface superconductivity. For the corresponding Gaussian quantities, see ISO 31-5:1992, annex A.
13-37.2 (—)	lower critical magnetic flux density	B_{c1}	For type II superconductors, the threshold magnetic flux density for magnetic flux entering the superconductor	
13-37.3 (—)	upper critical magnetic flux density	B_{c2}	For type II superconductors, the threshold magnetic flux density for disappearance of bulk superconductivity	

Units SOLID STATE PHYSICS *(continued)*

Item No.	Name of unit	International symbol for unit	Definition	Conversion factors and remarks
13-34.a	metre	m		
13-35.a	joule	J		
13-35.b	electronvolt	eV		1 eV = (1,602 177 33 ± 0,000 000 49) × 10^{-19} J [1]
13-36.a	kelvin	K		
13-37.a	tesla	T	1 T = 1 Wb/m^2 = 1 V · s/m^2	For the Gaussian CGS unit of magnetic flux density, the gauss, see ISO 31-5:1992, annex A.

[1] CODATA Bulletin 63 (1986).

SOLID STATE PHYSICS (*concluded*) Quantities

Item No.	Quantity	Symbol	Definition	Remarks
13-38 (*13-37*)	superconductor energy gap	Δ		
13-39.1 (*13-38.1*)	London penetration depth	λ_L	If an applied magnetic field is parallel to the plane surface of a semi-infinite superconductor, the field penetrates the superconductor according to the expression $B(x) = B(0)\ \exp(-x/\lambda_L)$ where x is the distance from the surface	
13-39.2 (*13-38.2*)	coherence length	ξ	The distance in a superconductor over which the effect of a perturbation is appreciable	
13-40 (*13-39*)	Landau-Ginzburg number	$\varkappa$	$\varkappa = \lambda_L/(\xi\sqrt{2})$ at $T = 0$	
13-41 (*13-40*)	magnetic flux quantum	Φ_0	$\Phi_0 = h/2e$	$\Phi_0 = (2{,}067\ 834\ 61 \pm 0{,}000\ 000\ 61) \times 10^{-15}$ Wb [1]

[1] CODATA Bulletin 63 (1986).

Units SOLID STATE PHYSICS (*concluded*)

Item No.	Name of unit	International symbol for unit	Definition	Conversion factors and remarks
13-38.a	joule	J		
13-38.b	electronvolt	eV		1 eV = (1,602 177 33 ± 0,000 000 49) × 10^{-19} J[1]

[1] CODATA Bulletin 63 (1986).

Item No.	Name of unit	International symbol for unit	Definition	Conversion factors and remarks
13-39.a	metre	m		
13-40.a	one	1		See the introduction, subclause 0.3.2.
13-41.a	weber	Wb	1 Wb = 1 V · s	For the Gaussian CGS unit of magnetic flux, the maxwell, see ISO 31-5:1992, annex A.

Annex A

(normative)

Symbols for planes and directions in crystals

Miller indices	h_1, h_2, h_3 or h, k, l
Single plane or set of parallel planes in lattice	(h_1, h_2, h_3) or (h, k, l)
Full set of planes in lattice equivalent by symmetry	$\{h_1, h_2, h_3\}$ or $\{h, k, l\}$
Direction in lattice	$[u, v, w]$
Full set of directions in lattice equivalent by symmetry	$\langle u, v, w \rangle$

NOTES

1 If the letter symbols are replaced by numbers in the bracketed expressions, it is customary to omit the commas.

2 A negative numerical value of h, k or l is commonly indicated by a bar above the number, for example $(\bar{1}10)$.

(*Continued from second cover page*)

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 31-3 : 1992	IS 1890 (Part 3) : 1995 Quantities and units: Part 3 Mechanics (*second revision*)	Identical
ISO 31-4 : 1992	IS 1890 (Part 4) : 1982/ ISO 31/4 : 1978 Quantities, units and symbols: Part 4 Heat (*first revision*) (*under revision*)	Technically Equivalent
ISO 31-6 : 1992	IS 1890 (Part 6) Quantities and units: Part 6 Light and related electromagnetic radiations (*first revision*)	Identical
ISO 31-7 : 1992	IS 1890 (Part 7) : 1995 Quantities and units: Part 7 Acoustics (*first revision*)	Identical
ISO 31-9 : 1992	IS 1890 (Part 9) : 1995 Quantities and units: Part 9 Atomic and nuclear physics (*first revision*)	Identical
ISO 31-11 : 1992	IS 1890 (Part 11) : 1995 Quantities and units: Part 11 Mathematical signs and symbols for use in the physical sciences and technology (*second revision*)	Identical
ISO 31-12 : 1992	IS 1890 (Part 12) : 1995 Quantities and units: Part 12 Characteristic numbers (*first revision*)	Identical

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards : Monthly Additions'.

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Amendments Issued Since Publication

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 323 01 31, 323 94 02, 323 33 75

Telegrams: Manaksanstha
(Common to all offices)

Regional Offices:	Telephone
Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	323 76 17 323 38 41
Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola CALCUTTA 700054	337 84 99, 337 85 61 337 86 26, 337 86 62
Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022	60 38 43 60 20 25
Southern : C. I. T. Campus, IV Cross Road, CHENNAI 600113	235 02 16, 235 04 42 235 15 19, 235 23 15
Western : Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400093	832 92 95, 832 78 58 832 78 91, 832 78 92

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